



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO.113 TO

FACILITY OPERATING LICENSE NO. NPF-38

ENERGY OPERATIONS, INC.

WATERFORD STEAM ELECTRIC STATION, UNIT 3

DOCKET NO. 50-382

1.0 INTRODUCTION

By applications dated June 22, and December 9, 1994, Entergy Operations, Inc. (the licensee), requested changes to the Waterford Steam Electric Station, Unit 3, (Waterford 3), Technical Specifications (TSs). The requested changes would revise plant protection system trip setpoints and allowable values such that they will be consistent with the current setpoint/uncertainty methodology being implemented at Waterford 3.

The proposed changes are based on recalculated uncertainties resulting from an improved setpoint uncertainty calculation and the installation of upgraded transmitters that provide input to the protection system. The changes account for additional uncertainties and do not affect the original safety analysis values (analytical limits).

The proposed changes affect TS Tables 2.2-1 and 3.3-4 and associated Bases 2.2.1, 3/4.3.1, and 3/4.3.2 as follows:

1. Table 2.2-1 Item 2) Linear Power Level - High: The trip setpoint of  $\leq 110.1\%$  of Rated Thermal Power (RTP) and the allowable value of  $\leq 110.7\%$  RTP would be changed to  $\leq 108\%$  and  $\leq 108.76\%$  respectively.
2. Table 2.2-1 Item 3) Logarithmic Power Level - High: The allowable value of  $\leq 0.275\%$  of RTP would be changed to  $\leq 0.280\%$ .
3. Table 2.2-1 Item 4) Pressurizer Pressure - High: The trip setpoint of  $\leq 2365$  psia and allowable value of  $\leq 2372$  psia would be changed to reflect  $\leq 2350$  and  $\leq 2359$  respectively.
4. Table 2.2-1 Item 5) Pressurizer Pressure - Low: The allowable value of  $\geq 1644$  psia would be changed to  $\geq 1649.7$ .
5. Table 2.2-1 item 6) Containment Pressure - High: The allowable value of  $\leq 17.3$  psia would be changed to  $\leq 17.4$ .

6. Table 2.2-1 Item 7) Steam Generator Pressure - Low: The allowable value of  $\geq 748$  psia would be changed to  $\geq 749.9$ .
7. Table 2.2-1 Item 8) Steam Generator Level - Low: The allowable value of  $\geq 26.7\%$  would be changed to  $\geq 26.48\%$ .
8. Table 2.2-1 Item 11) Steam Generator Level - High: The allowable value of  $\leq 88.4\%$  would be changed to  $\leq 88.62\%$ .
9. Table 2.2-1 Item 16) Reactor Coolant Flow - Low: The trip setpoint of  $\geq 23.8$  psid and the allowable value of  $\geq 23.6$  psid would be changed to  $\geq 19.00$  and  $\geq 18.47$  respectively.
10. Table 3.3-4 Item 5b) Refueling Water Storage Pool - Low: The allowable value of  $\geq 9.3\%$  would be changed to  $\geq 9.08\%$ .
11. Table 3.3-4 Items 7c & d) Emergency Feedwater, Steam Generator  $\Delta P$  - High: The trip setpoint of  $\leq 127.6$  psid and allowable value of  $\leq 136.6$  psid would be changed to  $\leq 123$  psid and  $\leq 134$  respectively.

## 2.0 EVALUATION

The proposed changes are based on recalculated uncertainties resulting from an improved plant protection system trip setpoint uncertainty calculation and the installation of several upgraded transmitters.

Each protective function effected by the proposed changes is discussed below:

Linear Power Level - High: This signal initiates a reactor trip on high linear neutron flux and provides protection against core damage during uncontrolled Control Element Assembly (CEA) withdrawal from low power; uncontrolled CEA withdrawal at power; and CEA ejection. The proposed changes would revise the Linear Power Level - High setpoint, in TS Table 2.2-1 from  $\leq 110.1\%$  of RTP to  $\leq 108\%$  and the allowable value from  $\leq 110.7\%$  RTP to  $\leq 108.76\%$  to ensure the analytical limit of  $115\%$  is met with excess margin.

Logarithmic Power Level - High: This signal assures the integrity of the fuel cladding and reactor coolant system boundary in the event of an unplanned criticality during a shutdown condition, resulting from either dilution of the soluble boron concentration or withdrawal of CEAs and provides protection during CEA withdrawal. The proposed changes would revise the Logarithmic Power Level - High allowable value, in TS Table 2.2-1 from  $\leq 0.275\%$  RTP to  $\leq 0.280\%$  to ensure the analytical limit of  $2.6\%$  is met with excess margin.

Pressurizer Pressure - High: This signal initiates a reactor trip on high pressurizer pressure. It provides protection against high reactor coolant system pressure. And in conjunction with pressurizer safety valves and main steam safety valves, it provides protection against overpressurization of the reactor coolant pressure boundary during loss of electrical load without reactor trip from turbine trip, loss of condenser vacuum, CEA withdrawal from low power conditions, chemical and volume control system malfunction, or main

feedwater system pipe break events. The proposed changes would revise the Pressurizer Pressure - High setpoint, in TS Table 2.2-1 from  $\leq 2365$  psia to  $\leq 2350$  and the allowable value from  $\leq 2372$  psia to  $\leq 2359$  to ensure the analytical limit of 2422 is met with excess margin.

Pressurizer Pressure - Low: This signal limits core damage during postulated loss of coolant accident and CEA ejection events. The proposed changes would revise the Pressurizer Pressure - Low allowable value, in TS Table 2.2-1 from  $\geq 1644$  psia to  $\geq 1649$  to ensure the analytical limit of 1560 is met with excess margin.

Containment Pressure - High: This signal protects the containment vessel integrity and minimizes radioactive releases during a postulated main steam line beak event. The proposed changes would revise the Containment Pressure - High allowable value, in TS Table 2.2-1 from  $\leq 17.3$  psia to  $\leq 17.4$  to ensure the analytical limit of 19.7 is met with excess margin.

Steam Generator Pressure - Low: This signal provides a reactor trip to assist the engineered safety features system during a main steam line break or feedwater line break event. The proposed changes would revise the Steam Generator Pressure - Low allowable value, in TS Table 2.2-1 from  $\geq 748$  psia to  $\geq 749.9$  to ensure the analytical limit of 678 psia is met with excess margin.

Steam Generator Level - Low: This signal assures that there is sufficient time for actuating the emergency feedwater pumps to remove decay heat from the reactor during a main steam line break event. The proposed changes would revise the Steam Generator Level - Low allowable value, in TS Table 2.2-1, from  $\geq 26.7\%$  to  $\geq 26.48\%$  to ensure the analytical limit of 5% is met with excess margin.

Steam Generator Level - High: This signal prevents moisture carryover from the steam generators which could result in damage to the turbines. The proposed changes would revise the Steam Generator Level - High allowable value, in TS Table 2.2-1 from  $\leq 88.4\%$  to  $\leq 88.62\%$  to ensure the analytical limit of 90% is met with excess margin.

Reactor Coolant Flow - Low: This signal provides protection for loss of reactor coolant flow during a sheared shaft event and steam line break with a loss of offsite power event. The proposed changes would revise the Reactor Coolant Flow - Low trip setpoint, in TS Table 2.2-1, from  $\geq 23.8$  psid to  $\geq 19.00$  and allowable value from  $\geq 23.6$  psid to  $\geq 18.47$  to ensure the analytical limit of 15.68 is met with excess margin.

Refueling Water Storage Pool - Low: This signal allows long term cooling of the reactor core during a loss of coolant accident. The proposed changes would revise the Refueling Water Storage Pool - Low allowable value, in TS Table 3.3-4, from  $\geq 9.3\%$  to  $\geq 9.08\%$  to ensure the analytical limit of 7.43% is met with excess margin.

Steam Generator Differential Pressure - High: This signal enables emergency feedwater only to the intact steam generator during a steam line break event.

The proposed changes would revise the Steam Generator Differential Pressure - High setpoint, in TS Table 3.3-4 from  $\leq 127.6$  psid to  $\leq 123$  and the allowable value from  $\leq 136.6$  psid to  $\leq 134$  to ensure the analytical limit of 230 psid is met with excess margin.

The proposed changes to Bases 2.2.1, 3/4.3.1, and 3/4.3.2 would revise the Bases to include a brief description of how the trip setpoints and allowable values are determined.

We have reviewed the proposed TS changes and conclude that these changes have no effect on the original safety analysis values (analytical limits). Also these changes meet the intent of Regulatory Guide (RG) 1.105, Revision 2, "Instrumentation Setpoints for Nuclear Safety Related Instrumentation" because its guidelines were used as a guide for establishing the Waterford 3 setpoint program. This program was used to establish the proposed new setpoints and allowable values for trip parameters.

Based on the above, the staff concludes that the proposed changes to the Waterford 3 Steam Electric Station TS Tables 2.2-1 and 3.3-4 and Bases 2.2.1, 3/4.3.1 and 3/4.3.2 are consistent with the criteria of RG 1.105, and are therefore, acceptable.

### 3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Louisiana State official was notified of the proposed issuance of the amendment. The State official had no comments.

### 4.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration and there has been no public comment on such finding (59 FR 39586 and 60 FR 6300). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

5.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

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